

2368

Diag. Ch. No. 9302 & 9370

U. S. COAST AND GEODETIC SURVEY.

Henry S. Pritchett, Superintendent.

State: *Alaska*

DESCRIPTIVE REPORT.

Hydrographic Sheet No. *2368*

LOCALITY:

Kusilvak Entrance, Yukon River

1898.

CHIEF OF PARTY:

J. F. Pratt, Asst.

2368

FEB. 17. 1899. 02527

U. S. Coast and Geodetic Survey,
Dr. Henry S. Pritchett, Superintendent.

Hydrography and Topography

of the

Kusilvak Entrance

to the

Yukon River, Alaska.

by the

Party in charge of J. F. Pratt, Assistant.

Begun August 9th. 1898.

Ended September 9th. 1898.

Scale 1/20 000

Two pages of title and 13 pages.

Page one of title.

Statistics of Hydrography, Kusilyak Entrance Sheet.

Date	letter	Number of				vessel
		vol.	angles & positions	soundings	miles statute	
1898.	brown					
Aug. 10	C	11	27	244	7.5	Str. Taku.
" 11	D	11	45	556	12.	" "
" 26	G	11	12	115	7.	" "
Total	S		84	695	25.5	
	green					
Aug. 9	a	8	10	108	1.5	Whale-B. No. 1
" 19	b	8	74	1290	6.5	" "
" 20	c	8	52	830	9.5	" "
" 22	d	8 & 9	65	1079	13.	" "
Total	4		201	3307	30.5	
	blue					
Aug. 27	e	3	15	199	4.	Lch. Alpha
" 28	l	3	26	302	9.	" "
" 30	m	3	151	1361	36.	" "
Sep. 1	n	3	72	733	17.5	" "
" 7	o	3	73	887	22.5	" "
" 9	p	3	18	311	5.5	" "
Total	6		355	3793	94.5	
	yellow					
Aug. 31	B	13	6	75	3.	Str. Yukon.
Sep. 3	C	13	5	50	2.	" "
" 4	D	13	7	46	3.	" "
" 8	E	13	10	105	4.5	" "
" 9	F	14	20	280	10.5	" "
Total	5		48	556	23.0	
Str. Taku	3		84	695	25.5	
W. E. No. 1	4		201	3307	30.5	
Lch. Alpha	6		355	3793	94.5	
Str. Yukon	5		48	556	23.0	
Total	18		688	8351	173.5	18.0 sq. miles.

Two pages of title and 13 pages.

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Kusilvak Entrance Sheet, Descriptive Report.

Soundings and Tidal Data.

The tides used in the reduction of soundings are those observed at Nioklakowik and Kwiklochun Tidal Stations.

The adopted Datum Plane on Nioklakowik Staff = 2.73 feet

The adopted Datum Plane on Kwiklochun Staff = 1.89 feet.

The highest tide observed at Kwiklochun was 5.9 feet

The lowest tide observed at Kwiklochun was 2.2 feet

The mean rise and fall at Kwiklochun, for 27 days was 2.4 feet (maximum 3.9 feet minimum 1.3 feet, in any one day.

For further data see descriptive matter accompanying Kusilvak Entrance and Kripniyuk Sheets.

Main channel.

This sheet shows the mouth of the Kusilvak or south channel of the Yukon River from about a mile above, on its north bank, from where it leaves its well defined banks, well out into the off-shore bars. At the eastern edge of the sheet this great body of water is confined between banks about 1400 (0.85 mile) apart, after leaving which there is a very abrupt physical change in its condition by spreading out to the northward and southward with numerous minor channels, while the main river widens to about 2700 metres (1.7 miles), then spreads out over the flats, through which its channel is only well defined at extremely low tide, all the shoals and flats being covered at high tide.

The last vegetation on the north side is the area of marsh grass in the vicinity of Grass triangulation station.

The main channel beyond the river proper is called, by the Eskimos, the Acharon (A-char-on) ; it is considered by them to be the principal outlet of the Yukon and has the appearance of carrying a larger volume of water than any other at this mouth and is undoubtedly the channel partially explored by Capt. E. E. Smith, in 1867, of the Western Union Telegraph Company's expedition and probably also by the Russian, Glasunoff, 1835-1838. (see Dall's Alaska, pp. 275- 277) Although the position of the channel accords well with Cap't. Smith's description, the depths of water was not found, indicating either that his soundings were at an exceptionally high tide or that the channel has shoaled since that time.

North Channels.

The first Channel leaving the main river is the Nurukomarot turning abruptly to the north; in about the relative position of the "American Mouth" as shown on the old chart, but with the current in the opposite direction. Although as wide as the main river, Nurukomarot is much shoaler, apparently has a maximum depth of about 9 feet, and does not seem to carry a large volume of water. A small offshoot from this is the Avogon, which according to the Eskimos rejoins it farther on, the name being then Avogon.

Below, on the north side, the natives name two channels, the Kwiklowak and the Kulmuknuk. The Kwiklowak appears to be next to the Acharon in depth and volume of water discharged; as it is the Eskimo name for the river above, the position of the channel to which they apply this name may give some idea of the former conditions at the mouth. According to the natives these northern channels discharge into the sea and do not join the Kwikpak.

From "Kwik" triangulation station, for about five miles towards "Grass" triangulation station, are almost continuous shoals, bare at low tide, but over which the current pours out and in, during the first portion of the ebb and ^{last of the} flood.

From "Grass", from the north around to west, the region is very shoal as far as the eye can reach and at low tide the drift, which is comparatively small in size, is greatly magnified by refraction, is seen throughout the whole quadrant.

South Channels.

There are seven small channels leaving the river, near together on the southside, all flowing into the Kwemeluk and and with it rejoining the main current opposite "Flat" triangulation station, of these the only one of importance is the Kwiklochun, about 150 metres, at first, wide, (0.1 mile,) but carrying a good deal of water with a strong current; it turns, abruptly, to the south from the main river and after a

slightly winding course of two and one half miles it joins the Kwemeluk.

The Kwiklochun is the favorite route of the Eskimos, probably because more protected and also leading more more directly to their settlements, the channel is also more easily followed than those of the main river, where extensive bars and middle grounds are found. The Kwiklochun is not suitable for a boat drawing more than four and one half feet, on account of shoals at its entrance and at its junction with the Kwemeluk. Below this Junction the Kwemeluk has good water (about 20 feet) with nearly a straight course to its junction with the main channel opposite "Flat" triangulation station.

West of the Kwiklochun, the Kwemeluk is separated from the main river by extensive shoals and marshes over six miles in length, the greater portion of which are flooded at high tide. Above the Kwiklochun the Kwemeluk has a width of nearly two miles, with a moderate current and a deep channelway extending beyond the limits of this sheet, it soon narrows down to about one mile in width which it averages for the eight miles explored. the Eskimos state that it is formed by the junction of the Akularak and Kanelik sloughs the latter a branch of the former which leaves the Kusilvak at the Great Bend opposite the Utak-awt Channel. The dimensions of the Kwemeluk indicate that it may

have once been an important mouth of the Yukon. The upper entrance to the Akularak at present will barely admit a boat drawing four feet, according to statements of the Catholic Missionaries whose mission is located on it.

Some small streams enter the Kwemeltuk from the south, within the limits of this sheet. The largest, the Nioklakowik has not sufficient water to afford anchorage in its mouth for a boat drawing four feet. The Kiangolevik, which is the next above, according to the natives, not on this sheet, affords a passage for kayaks to the Kripniyuk River, though it is noticeable that they appear to travel by the outer coast in preference, probably because the latter is more direct and fairly well protected by the extensive flats off shore.

Commerce.

The Kusilvak Entrance of the Yukon has never been used regularly, by steamboats. As far as known only two steamboats have entered this mouth, ~~which was~~ during the summer of 1898, the "Evans" a stern wheel river boat from Unalaska, which got lost and the natives piloted her in here, and the other the "Joe Matthews", a small propeller, from Seattle, drawing about five feet, this latter boat was several days in finding its way in over the bar and experienced a great deal of trouble in doing so. Both of these steamers came up through the Kwiklochun

and probably both entered by the Acharon Channel, as they were piloted by natives from Kripniyuk.

The Catholic Mission steamer is said to have made a voyage along the coast to the southward some years since, using this mouth. Trading schooners, (small sail boats) belonging to half breed traders, down the coast, are said to use this mouth on their way to St. Michael. The Eskimos in their umiaks (large seal skin boats) do not follow the outside channel, but keep comparatively close to the shore, taking advantage of high tides.

The Kusilvak mouth is about 110 miles from St. Michael, in an air line, almost double the distance of the Aphoon Entrance from the same place, so that it is very unlikely that it will ever be used from that direction. It is apparently about the same distance from Scammon Bay that the Aphoon Entrance is from St. Michael, but no reliable information can be gathered regarding Scammon Bay as a suitable harbor for ocean going vessels, the natives say that the Alaska Commercial Company's Steamer Bertha has been at anchor there in years past, but every thing regarding the place is more or less hazy.

The entrance to the Kripniyuk River, about about one third the distance to Cape Dyer, is equally as difficult to enter as the Kusilvak and there is certainly no other harbor between Scammon Bay and the Yukon.

Anchorage and Dangers.

In the lower three or four miles of the Kwemeluk moderate sized vessels can anchor with comparative safety, as the flat on the north side of the channel breaks the sea, but all the surrounding country is too low to offer any protection from wind.

Light draft craft, under 100 tons burden, can moor, in heavy weather, in the channel of the Kwiklochun close to the shore abreast the "Astronomical Station", the bushes there serve to break the wind a good deal; undoubtedly this is the most protected spot in the lower river and craft with good holding gear could weather safely a very heavy storm here.

The bottom is everywhere a fine bluish mud, entirely free from rocks, gravel or coarse sand. This mud is hard where exposed to wave action on the outer bars, but often soft and treacherous along the smaller sloughs.

The main channels are everywhere free from snags, though trees are often seen temporarily lodged on the bars and quantities of drift-wood is piled along the shores in places, the largest quantities, in this region, being along the Kwiklochun where the accumulation is probably protected, from the outgoing ice, by the bushes on the upstream side.

There are no trees in this part of the Delta, but the

drift wood may be cut for fuel.

Water and Sediment.

The channels and banks undoubtedly change rapidly, both from erosion and deposit. Very probably most of this is effected each year during the breaking up of the ice, its consequent jams, and the great floods following.

During the latter part of the summer the amount of sediment carried by the water is small; a pint bottle-full allowed to stand for several weeks, showed only a very thin coat of whitish sediment on the bottom.

The water has a brownish white appearance, something like glacial water without its fine sharp grit. It has no unpleasant taste and is always fresh in the inner channels.

Pilots.

Pilots are necessary in navigating these waters, even with light draft vessels, until familiar with them.

The Eskimos are fairly expert in judging the water, though they do not always make sufficient allowance for draft of steamers.

The extreme flatness of the land and the remarkable mirage effects, often seen, over the shoals, make this whole region very deceptive.

Currents.

A table is appended showing the currents observed in these

these waters. The highest was 1.53 knots off "Log" signal.

In the Qwiklochun and the main river, above there, the current is not overcome, or even very materially effected by the incoming tide. In the lower Kwemeluk, however, there is an in and out flowing tidal current.

Weather.

The prevailing winds, in summer, are northeasterly, easterly and southeasterly, the strong blows usually, it is said, come from the same directions. The winds are generally light in summer. No fog was seen in August and September, but there was a good deal of rain and thick mist.

Land and Vegetation.

All the land in this region is low and flat,* at the upper villages and up the Kwemeluk it gets to be four or five feet above high tide, but even here it is undoubtedly flooded at the opening of the river, as is evidenced by drift wood found well back from the shore. The higher land is usually a mossy tundra with ponds, the lower land fresh marsh with grass and ponds and usually a narrow firm strip of ground along the banks.

Considerable growths of willow and alder bushes, from six to twelve feet high, are found in patches, at first, but ap-

pear to be continuous from ^{the} up-stream edge of the sheet up the river. { * with the exception of a small ridge 20 or 30 feet high, nearly midway between the Kusilyuk and the Kwemeluk and about the same distance east of the Kwemeluk's great bend.

The land and vegetation are so low as to be entirely lost to view a few miles off the coast.

The only landmarks visible on the outer bar, are Kusilvak Mountain and the mountains back of Cape Dyer, only seen in clear weather.

Natives.

Many Eskimos make this region their summer home, there being nine villages within the limits of this sheet; they live in log houses built of a combination of drift wood and earth, or in cotton tents and spend the summer in fishing for salmon and drying their fish; they migrate up the river for the winter, most of them apparently going up the Kwemeluk or the Kripniyuk. They are perfectly honest, peaceable and friendly, but not clean.

No white men live in the Delta south of the Aphoon, except the Catholic missionaries and they have for the present abandoned their mission on the Akularak.

Names.

A table is appended giving the pronunciation of the various Eskimo names appearing on the sheet. Generally different natives give different pronunciations and it is difficult to represent the sounds with our alphabet.

Most of the village names are of little geographic value as they seem to belong to the residents rather than to the

place.

Control.

The control of this sheet is an astronomical station, with approximate latitude and longitude and azimuth determinations, a base line about one and one half miles long and a system of triangulation, all stations being shown in red on the sheet.

The topography is transferred from the original plane-table sheets, which have some traverse lines and sextant work plotted on them. Where but the edge of the sanding is shown the position of the edge of the bar is estimated only.

The projection shown in red intersections is from the revised field computations, the first projection, in black, being based on a small part of the astronomical observations. The difference between the projections is 60 metres in longitude and 18 metres in latitude. It is probable that the geographic positions are still uncertain by that amount because of the limited astronomical observations.

Vocabulary of names on the sheet.

The following list gives the pronunciation of the Eskimo names in this locality; where more than one is given the first has been used.

It would be extremely desirable that all the nomenclature of this region be made to conform to the grammar and dictionary that Father Barnum has during the past season just

completed , after a number of years of hard labor among these dirty and unattractive people, he is now supposed to be at Georgetown College, Washington, D. C. preparing these works for publication.

The vowel marks conform to Websters dictionary.

The termination m^äüt, (Barnum); m^äüt or mⁱüt means village, and is pronounced by Father Barnum mayut

Channels and Streams.

Kwik'-lō-wak, Kwik'-thlōk (meaning old river)

Kū'-sil-vak, is probably Russian for this channel.

Nū-rūk-ōm-a-rōt.

A'-vō-gōn. A'-vū-gūn.

Kūt-mūk-nūk.

A-chā-ron. A-cher-on.

Awē-mē-luk. Kwim-a-luk.

Kwik-lōk-chūn. Kwich-thlūk-chun.

Tār-ān-ō-vōk'-chō-vik- Tar-ōn-a-rōk'-o-chūk-ō-vik.

Xi-ang-ō-lē-vik.

Ni-ō-klak'-o-wik. No-rōk-a-glōk-a-vik.

Wāk-la-rok.

Villages.

A-gēk-lā-rōk'-ā-m^äüt.

Ing-rā-ka-klak'-ā-m^äüt.

Aā-ōk-lā-rok'-ā-m^äüt.

ä = as in you

Nē-lā-ka-māut.

Nūn-a-mēk-rōk-a-māut.

Nun-a-vi-ga-ga-miut.

Na-rok-a-glōk-a-mik-ā-māut.

Na-roch-li-ga-ga-vich-a-miut.

Wa-klā-rok-ā-māut.

Wauck-li-ga-ga-miut.

Hō-gō-māut.

Currents.

The current at the following places was measured with
log chip and line.

1898.		knots per hour,	magnetic	depth feet	direction & force of wind.	position.
Aug. 8	12, M.	0.96	W.S.W	9.	N. EXN. 4	Off "Flat", 350 ^m signal bearing NW
" 10	10, A.M.	1.10	S.W. X S.	24	S.W. 2	Kwiklochun channel off "Camp" signal
" 10	2, P.M.	1.22	S.W.	15	N.W. 3	Position 27C. Off "Shore" 200 ^m
" 11	8, A.M.	1.53	W.S.W.	19	N.N.W. 4	Off "Log" 600 ^m
" 11	10, 30, A.M.	1.10	S.W.	24	N. 4	Off "Stump" 450 ^m position angles, Flat to Town 96° 54', Town to Villa- ge, 48° 24'
" 11	3, P.M.	0.66	S.W. X S.	9	N. 4	Between "Meadow & Flat" a little below position Meadow to Town 67° 40' & Town to Flat 67° 48'
" 11	5, P.M.	0.10	S.	13	N. 3	Off "Town", 200 ^m
" 11	6, 30, P.M.	0.16	N.E.	13	N. 3	" " "
" 12	8, A.M.	1.26	S.W. X S.	24	S.E. 3	Off "Camp" T. Gag 2.2
" 12	5, P.M.	1.20	S.W. X S.	24	E 3	" " " 2.6
" 13	6, A.M.	1.16	S.W. X S.	24	E. X S. 3	" " " 2.6
Sep. 3	10.40 A.M.	1.35	S.W. X S.	In channel between "Flat" and "Meadow" between positions 1C & 2C		


Ass't. Chief of party.